

Methods and Apparatus for Determining the Size  
and Shape of Particles

ABSTRACT OF THE DISCLOSURE

An instrument for measuring the size distribution of a particle sample by counting and classifying particles into selected size ranges. The particle concentration is reduced to the level where the probability of measuring scattering from multiple particles at one time is reduced to an acceptable level. A light beam is focused or collimated through a sample cell, through which the particles flow. As each particle passes through the beam, it scatters, absorbs, and transmits different amounts of the light, depending upon the particle size. So both the decrease in the beam intensity, due to light removal by the particle, and increase of light, scattered by the particle, may be used to determine the particle size, to classify the particle and count it in a certain size range. If all of the particles pass through a single beam, then many small particles must be counted for each large one because typical distributions are uniform on a particle volume basis, and the number distribution is related to the volume distribution by the particle diameter cubed.